Motorola HOME RADIO

SERVICE MANUAL

MODELS

53R1 53R1U
53R2 53R2U
53R3 53R3U
53R4 53R4U
53R5 53R5U
53R6 53R6U

CHASSIS

HS-384 HS-426

GENERAL INFORMATION

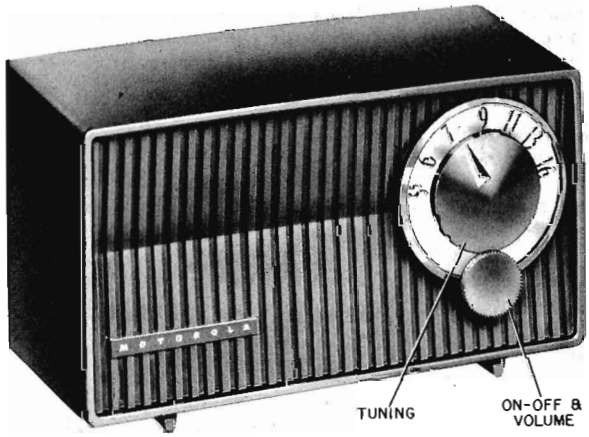
TYPE - AC-DC table model superheterodyne receiver with plated circuit chassis and loop antenna. Chassis HS-426 is the same as HS-384 except for omission of certain plated ground areas on chassis; circuits are identical.

RECEIVER MODELS -

Models	Color
53R1 (HS-384), 53R1U (HS-426)	Walnut
53R2 (HS-384), 53R2U (HS-426)	Ivory
53R3 (HS-384), 53R3U (HS-426)	Yellow
53R4 (HS-384), 53R4U (HS-426)	Gray
53R5 (HS-384), 53R5U (HS-426)	Green
53R6 (HS-384), 53R6U (HS-426)	Red

TUBE COMPLEMENT -

Type	Function
12BE6	Converter
12BA6	IF Amplifier
12AT6	Det, AVC & AF Amp
50C5	Power Amplifier
35W4	Rectifier



TUNING RANGE - 535 to 1620 Kc IF - 455 Kc

POWER SUPPLY - 117 volts AC or DC; 35 watts

INSTALLATION & OPERATING INSTRUCTIONS

POWER SWITCH & VOLUME CONTROL. Operated with the small lower knob. NOTE: Reverse the line cord plug in the wall outlet if radio does not operate from DC. When operating from AC, reversing the line cord plug in the wall outlet may sometimes improve reception.

TUNING. Stations are tuned in with the large upper knob.

ANTENNA. A built-in loop antenna eliminates the need for an outside antenna. When receiving a weak station, rotate the receiver slightly for best signal strength.

CAUTION: Never connect the radio chassis to water pipe, radiator, or other ground.

SERVICE NOTES

TO REMOVE CHASSIS FROM CABINET

1. Remove the four screws which hold the back cover, and remove the cover completely. The loop leads plug into the chassis.

2. Pull off the two control knobs from the front of the receiver.

3. Remove the Phillips head screw under the tuning knob, on the front of the receiver.

4. From the back, remove the screw which holds the line cord interlock plug.

5. Disconnect the speaker leads. They plug into the chassis.

6. From the back, remove the three screws which mount the chassis. See Figure 3.

7. Remove the chassis from the cabinet.

LIST APPLICABLE BULLETINS & SUPPLEMENTS HERE:

MOTOROLA, INC. 4545 AUGUSTA BLVD. CHICAGO 51, ILLINOIS

Part No. 68P631356 Price 10 Cents Printed in U.S.A.

CIRCUIT DESCRIPTION

1. The circuit of this chassis is conventional - there are no built-in resistors or capacitors. Leads are plated on both sides of the chassis base, thereby replacing the usual connecting wires and making wiring more uniform.

2. The metal plating extends through all the holes on the chassis, connecting circuits on the front with those on the rear.

3. Reference to the schematic diagram and to chassis will permit the circuit to be traced easily.

SAFETY PRECAUTIONS

1. The chassis of this receiver is connected directly to the power line, however, the power cord circuit is broken by an interlock when the cabinet back is removed for replacing tubes. When aligning or servicing the chassis from AC, an isolation transformer should be inserted between the power line and the chassis.

2. Do not service the chassis on a metal plate, because of the possibility of a short circuit.

3. Use caution when handling the chassis with power applied, because all high voltage leads are exposed.

4. The outer edges of the chassis and various plated areas are at ground potential.

COMPONENT REPLACEMENT

1. To prevent tube breakage, remove them before replacing components. CAUTION: Remove the tubes only by pulling them straight out. Wiggling a tube may bend a socket clip causing poor contact with the tube pin.

2. WHEN REMOVING DEFECTIVE COMPONENTS USE ONLY A SMALL SOLDERING IRON (60 WATTS OR LESS) TO AVOID DAMAGE TO THE WIRING. DO NOT USE A SOLDERING GUN. WARNING: THE LEADS ARE VERY THIN, AND EXCESSIVE HEAT WILL BURN THEM OR LOOSEN THEM FROM THE BASE MATERIAL.

3. Plated connections or leads, if damaged, may be replaced with a jumper of regular hookup wire.

4. It is recommended that IF transformers, tuning capacitor, the volume control, oscillator coil, or the electrolytic capacitor be removed by immersing all the lugs simultaneously into a small soldering pot. The component may then be lifted off the chassis easily. If a soldering pot is not available, heat each lug individually with a small soldering iron, and shake off as much molten solder as possible. Then, by alternately heating and loosening each lug, the entire component will be freed. The disadvantage of using a soldering iron instead of a soldering pot is that the plated connections may be pulled loose from the chassis.

5. An individual tube clip may be removed by squeezing it with pliers and then unsoldering it. The new clip snaps into the hole.

6. Resistors or capacitors may be removed by unsoldering one end at a time.

CAUTION: Clean all the solder from the holes before installing a new component. Do not let the solder run onto an adjacent lead, as a short circuit will be created.

ALIGNMENT

NOTE: If AC power is used, insert an isolation transformer between the power line and the receiver to avoid hum and electrical shocks. If an isolation transformer is not available, connect the low side of the signal generator to ground (the outer edges of the chassis) through a .1 mf capacitor.

1. Connect a low range output meter across the speaker voice coil.

2. Connect the low side of the signal generator to ground.

3. Set the signal generator for 400 cycle, 30% modulation.

4. Turn the receiver volume control to maximum.

5. Use a small fibre screwdriver for aligning the IF and diode transformers (a "K-Tran" alignment tool is recommended).

6. As stages are brought into alignment, reduce the signal generator output to a level which produces less than .40 volts (.05 watt) across the voice coil to avoid overloading the receiver.

7. See Figure 2 for adjustment locations and the following chart for procedure.

ALIGNMENT CHART

STEP	DUMMY ANTENNA	GENERATOR CONNECTION	GENERATOR FREQUENCY	GANG SETTING	ADJUST	REMARKS
IF ALIGNMENT						
1.	.1 mf	Grid of conv. (pin 7, 12BE6)	455 Kc	Fully open	1, 2, 3 & 4 (IF cores)	Adjust for maximum.
RF ALIGNMENT						
2.	.1 mf	Grid of conv. (pin 7, 12BE6)	1620 Kc	Fully open	5 (Osc)	Adjust for maximum.
3.	-	Radiation loop*	1400 Kc	Tune for max	6 (Ant)	Adjust for maximum.

*Connect generator output across 5" diameter, 5 turn loop and couple inductively to receiver loop. Keep loops at least 12" apart.

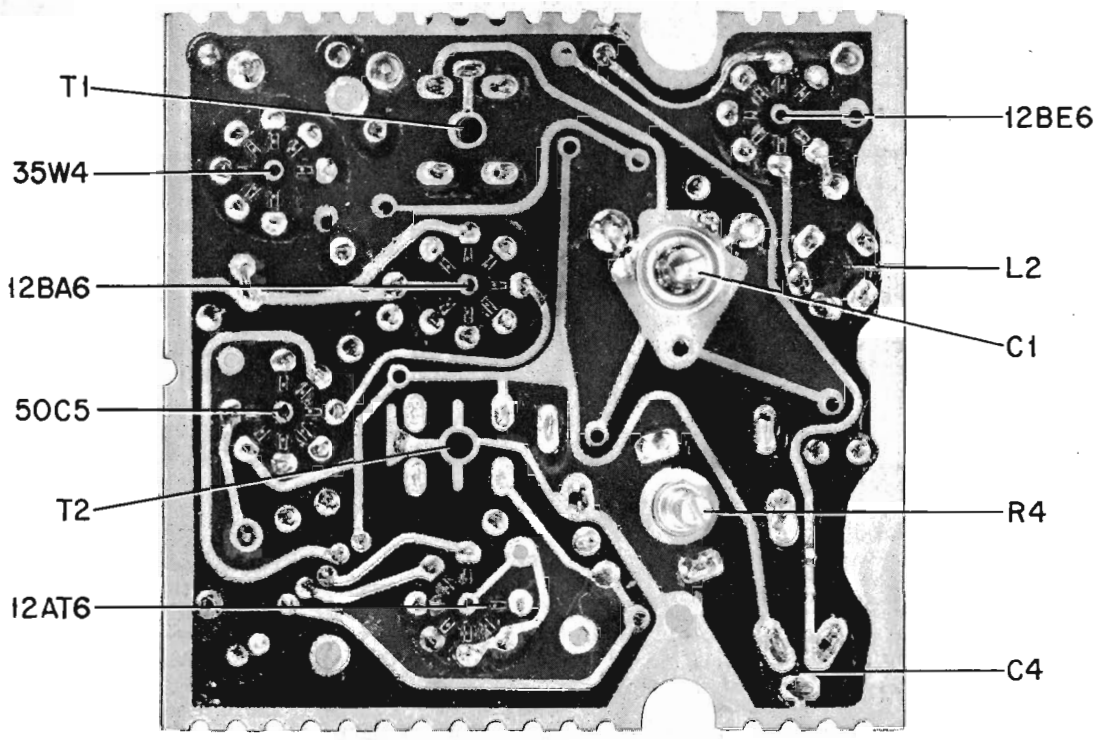


FIGURE 1. REAR VIEW OF CHASSIS HS-426 (CHASSIS HS-384 HAS CERTAIN ADDITIONAL GROUND AREAS)

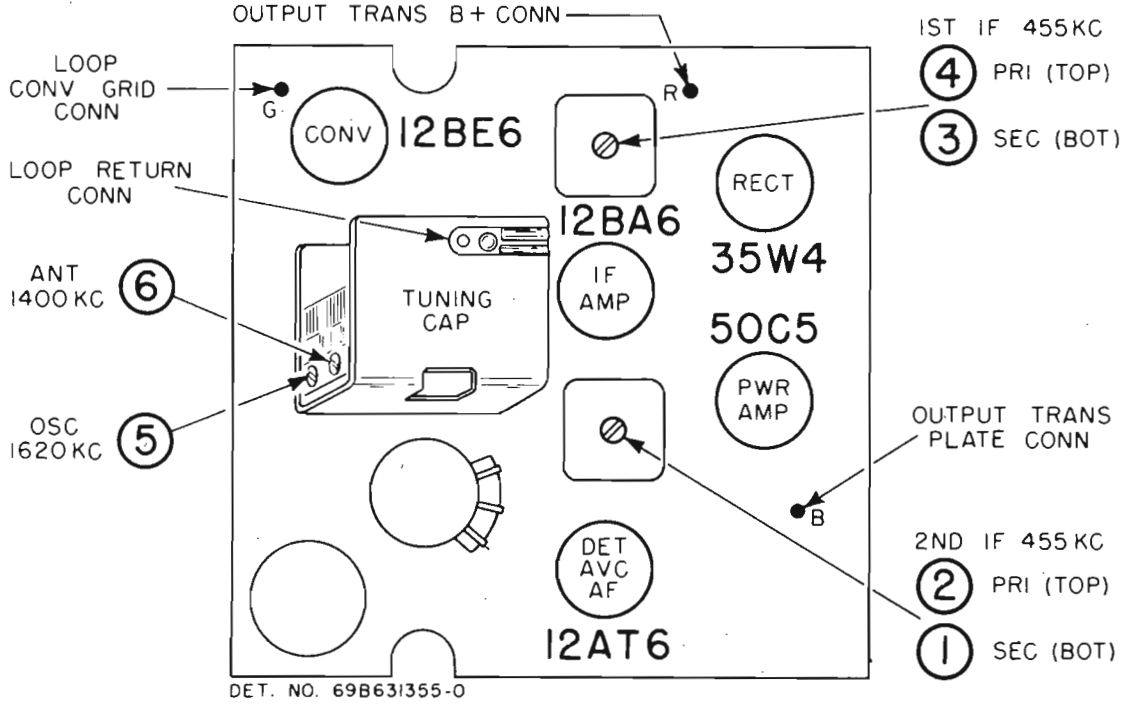


FIGURE 2. TUBE AND TRIMMER LOCATIONS

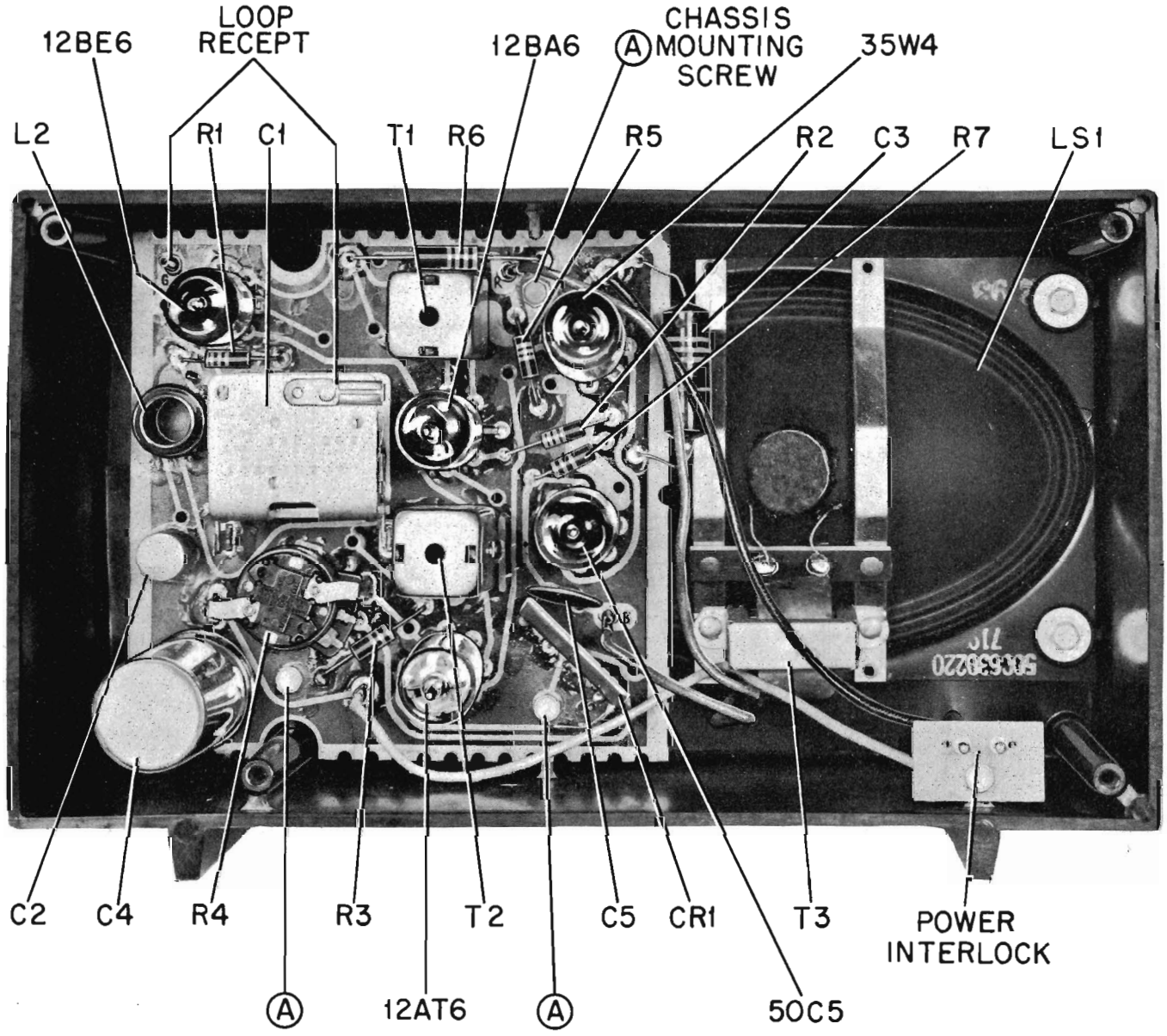


FIGURE 3. REAR VIEW OF RECEIVER

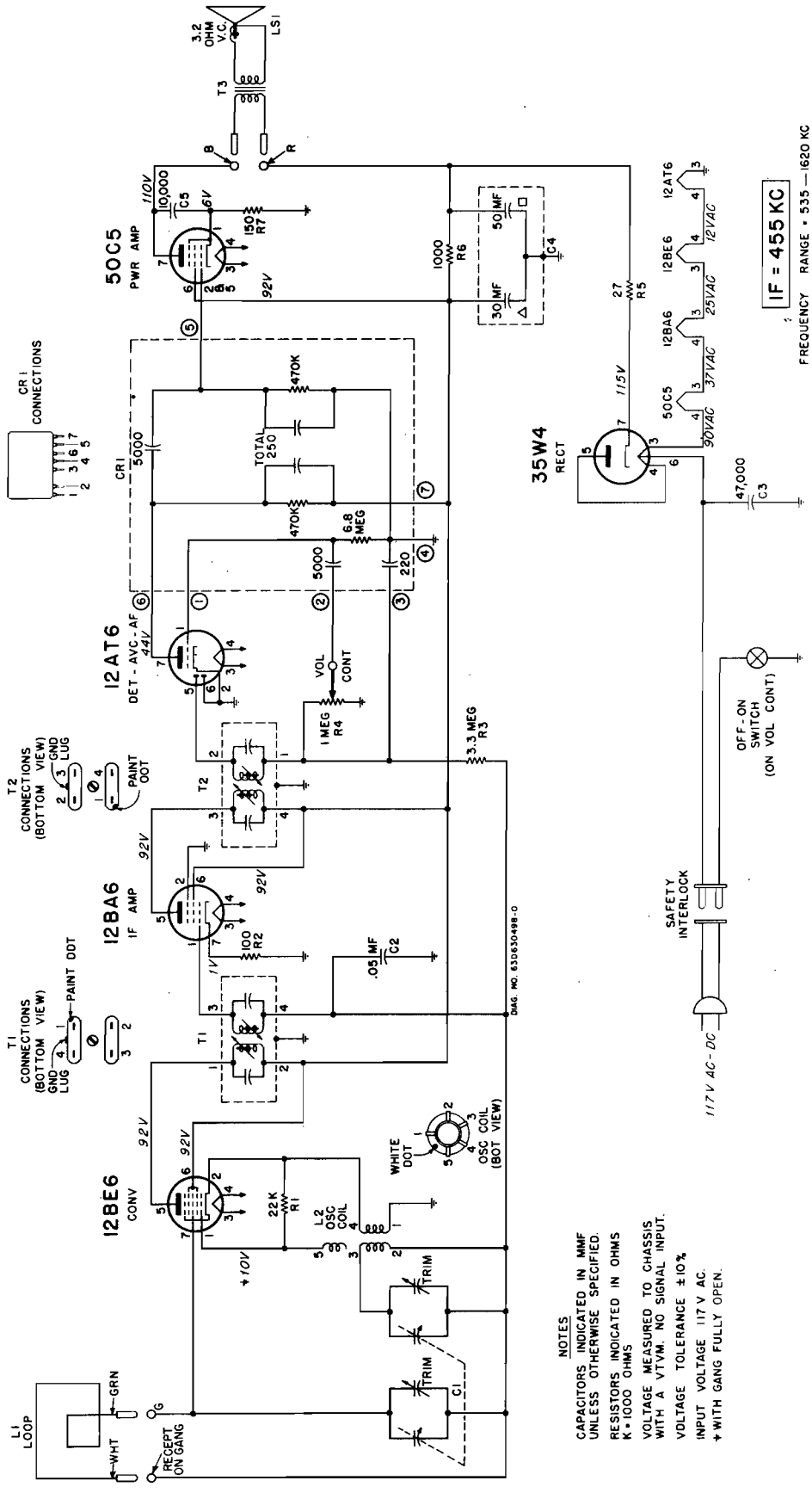


FIGURE 4. SCHEMATIC DIAGRAM

REPLACEMENT PARTS LIST

NOTE: When ordering parts, specify model number of set in addition to part number and description of part.

Ref. No.	Part Number	Description	List Price
CHASSIS PARTS - ELECTRICAL			
Capacitors			
C-1	19B630262	Variable: 2-gang.....	3.15
C-2	8R120842	Paper: .05 mf 200V.....	.40
C-3	8K490232	Molded paper: 47,000 mmf 400V	.30
C-4	23B630155	Electrolytic: 50-30 mf/150V.	1.95
C-5	21R120853	Ceramic disc: 10,000 mmf 450V	.25
Capacitor-Resistor			
CR-1	21B630180	Multiple Capacitor-Resistor Plate.....	.85
Coils			
L-1	24B630316	Loop & Panel Assembly: with line cord.....	1.40
L-2	24B630327	Oscillator coil.....	.85
Speaker			
LS-1 or	50C630220 50C631448	Speaker: 4 x 6; PM; 3.2 ohm VC; includes T-3.....	5.85*
		exch	4.40
Resistors			
	Note:	All resistors are insulated carbon type unless otherwise specified.	
R-1	6R6028	22,000 20% 1/2W.....doz	1.20
R-2	6R6018	100 20% 1/2W.....doz	1.20
R-3	6R2118	3.3 meg 20% 1/2W.....doz	1.20
R-4	18A630184	Volume control: 1 meg; with switch.....	1.25
R-5	6R5683	27 10% 1/2W.....doz	1.20
R-6	6R76004	1000 20% 2W.....	.25
R-7	6R3992	150 20% 1/2W.....doz	1.20
Transformers			
T-1	24C630284	1st IF Transformer: 455 Kc; complete.....	1.65
T-2	24K630898	2nd IF Transformer: 455 Kc; complete.....	1.65
T-3	25B630219	Output Transformer.....	1.85

Part Number	Description	List Price
CHASSIS PARTS - MECHANICAL		
42A610632	Clip, tube pin.....per/c	.50
28A631078	Plug, line cord (interlock).....	.10
29A630183	Terminal, pin (on speaker leads) .....doz	.35
29A620057	Terminal, pin (on loop leads)..doz	.25
CABINET PARTS		
16E630169	Cabinet, table model: plastic; walnut (53R1 & 1U).....	5.00*
16K630171	Cabinet, table model:plastic; ivory (53R2 & 2U).....	7.00*
16K630172	Cabinet, table model: plastic; yellow (53R3 & 3U).....	7.00*
16K630173	Cabinet, table model: plastic;gray (53R4 & 4U).....	7.00*
16K630174	Cabinet, table model: plastic; green (53R5 & 5U).....	7.00*
16K630175	Cabinet, table model: plastic; red (53R6 & 6U).....	7.00*
30K610638	Cord, line: with plug & receptacle	.95
5A19658	Eyelet, spacer (spkr mtg)..... doz	.25
5A70404	Grommet, cushion (spkr).....	.05
34B630265	Scale, dial.....	.45
36B630241	Knob, tuning: black.....	.45
36B630242	Knob, volume control: black.....	.25
3S115138	Screw, machine: 6-32 x 1-9/16 Phillips flat head; cad pl (chassis mtg - through front of cabinet)..... doz	.20
3S121050	Screw, thread cutting: #6 x 1/2 pl hex head; cad pl (chassis & back cover mtg).....doz	.25
3S121325	Screw, thread cutting: #6 x 3/4 pl hex head; cad pl (spkr mtg)...doz	.25

PRICES SUBJECT TO CHANGE WITHOUT NOTICE

*Plus Federal Excise Tax At Current Rate